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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,376	03/03/2005	Yoshio Nakano	266108US3PCT	3840
22850	7590	08/23/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER WOOD, ELLEN S	
			ART UNIT 1709	PAPER NUMBER
			NOTIFICATION DATE 08/23/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/526,376	<b>Applicant(s)</b> NAKANO ET AL.	
	<b>Examiner</b> Ellen S. Wood	<b>Art Unit</b> 1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-28 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/03/2005</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Non Patent Literature</u> .            |

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 11051151, filed on 03/03/2005.

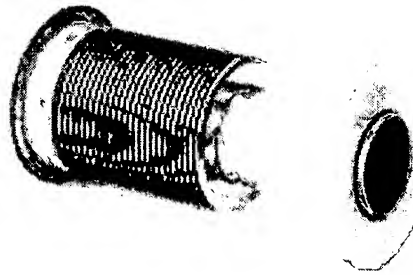
### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Hochberg et al. (US 3,830,261) in view of Senior Aerospace Metal Bellows Division ([www.metalbellows.com](http://www.metalbellows.com), 2001).

In regards to claim 9, the claim is limited to a bellows that is composed of a thin metal and having troughs and ridges. Hochberg et al. disclose a hollow body, such as a metal fuel lines, which fuel flows or is contained (abstract). Hochberg et al. fail to disclose a bellows having troughs and ridges. It is known to one of ordinary skill in the art that metal bellows can be used for a variety of different applications and can have a variety of different designs. Senior Aerospace Metal Bellows Division designs metal bellows that are used as reservoirs and fuel drains. The metal bellows can either be smooth or have troughs and ridges as seen in the figure below.



The Examiner notes that a bellows can be considered a metal hollow body in which Hochber et al. makes reference. Hochberg et al. disclose that the tube is encased in an inner overwrap and this overwrap is formed from strands or roving of fibrous material (col. 2 lines 37-39). The strands of fibrous material are braided over the exterior surface of the tube with the braid angle, which is the angle between crossing strands in the braid pattern, being between  $10^{\circ}$  and  $85^{\circ}$ . A braid angle of  $25^{\circ}$  is preferred (col. 2 lines 43-47). This range falls within Applicants range claimed in claim 9. Hochberg et al. disclose a separate foam layer that is between the tube and braided overwrap (col. 5 lines 66-68). Hochberg et al. fails to disclose that the buffer material will cover the outer face of the bellows from the bottom of the troughs to a height that is 0.5 to 2.0 times the height of the ridges. It is obvious to one of ordinary skill in art at the time the invention was made that a foam material applied to a bellows with troughs and ridges would cover the bellows from the bottom of the troughs to the ridges. The optimal vibration absorbance is desired, since it has been held that discovering an optimum value of result effective variable involves only routine skill in the art in the absence of unexpected results. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

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In regards to claim 10, Hochberg et al. disclose the fibrous strands may be impregnated with an embedded in resinous, elastomeric, or polymeric material (col. 2 lines 51-53).

In regards to claim 11, Hochberg et al. disclose the suitable resinous and polymeric materials are epoxy, polyurethane and those listed in U.S. Pat. No. 3,586,058 (col. 2 lines 60-65).

In regards to claim 12, Hochber et al. disclose a layer of sealant material surrounds the inner overwrap (fiber braid reinforcement) (col. 2 line 66-67). The fiber braid reinforcement does not have to be impregnated, thus when a liquid sealant material is applied to a non-impregnated fiber braid reinforcement it is technically impregnated. Hochberg et al. disclose that the sealant materials are polymeric material based rubbers (col. 3 lines 5-7). Hochberg et al. fails to disclose that the rubbers are those claimed in Applicants claim 12. It is known to one of ordinary skill in the art that the rubbers claimed are polymeric material based rubbers. Thus, it is obvious to one of ordinary skill in art at the time the invention was made that the polymeric material based rubbers applied to the fiber braid reinforcement would be a rubber based that has the type of chemical resistant that implies to Applicant's invention. Applicant also claims a wide variety of rubbers, thus the importance of the rubber material is not a claim limiting property. Examiner notes that natural rubber would not be a type of rubber used in Applicants invention due to the properties of natural rubber.

In regards to claim 13, Hochberg et al. disclose an outer overwrap is formed over the sealant layer (fiber braid reinforcement) (col. 3 lines 13-14). The outer overwrap is

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formed from strands or roving of high strength fibrous material (col. 3 lines 16-18). The strands of the outer overwrap are braided about the sealant layer (col. 3 lines 19-20).

In regards to claim 14, Hochberg et al. disclose the fibrous material are strands of fiber glass, dacron, rayon, nylon, graphite, and PRD-49 (col. 2 lines 37-41).

In regards to claims 17-20, Hochberg et al. disclose a separate foam layer that is between the tube and braided overwrap (col. 5 lines 66-68). Hochberg et al. disclose that the foam materials for use are natural, synthetic rubbers, and silicone and ethylene propylene rubbers (col. 5 lines 66-69 col. 6 line 1).

In regards to claims 21-27, Hochberg et al. disclose that the invention relates to an object with a hollow body, which is ideally suited for uses as a fluid line (col. 1 lines 64-66), thus it is a partially disposed in piping for a liquefied petroleum gas or liquefied natural gas.

In regards to claims 15-16, Hochberg et al. fails to disclose that the cross sections of bellows with ridges and troughs has either a U-shape or an S-shape. Senior Aerospace Metal Bellows Division displays cross-sections of their bellows with ridges and troughs having a U-shape or an S-shape. It would be obvious to one of ordinary skill in the art that the combined invention of Hochberg with the bellows of Senior Aerospace Metal Bellows would form a U-shape or S-shape cross-section, because the design of the bellows naturally has either a U-shape or S-shape cross section.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen S. Wood whose telephone number is 571-270-3450. The examiner can normally be reached on Monday-Thursday 7:30am-5:00pm EST Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ellen S Wood  
Examiner  
Art Unit 1709

**D. LAWRENCE TARAZANO**  
**PRIMARY EXAMINER**

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